

1135-VN-2060 **Melody Alsaker*** (alsaker@gonzaga.edu), Department of Mathematics, 502 E. Boone Avenue, MSC 2615, Spokane, WA 99258. *Imaging the Human Body using Electrical Impedance Data and a D-bar Algorithm with an Optimized Spatial Prior.*

Electrical Impedance Tomography (EIT) is a promising and versatile imaging technique that uses boundary current and voltage data to reconstruct the internal electrical properties of the body. There are numerous potential applications for EIT, and medical imaging in particular is being studied extensively by research groups around the world. Mathematically, EIT is an extremely ill-posed nonlinear inverse problem, and therefore is extremely sensitive to noise present in real-world data, as well as measurement and modeling errors. This poses many challenges in the reconstruction process, and EIT reconstruction methods are continually studied and improved upon in an effort to stabilize the reconstructions. Direct D-bar methods are one way to perform the mathematical inversion, and recent advances have shown that a carefully constructed spatial prior inserted into the inversion process can improve spatial resolution in the resulting images. In this talk, we present the first-ever human data reconstructions to use a D-bar algorithm with an included spatial prior. Static images and functional EIT videos of human thoracic data will be presented. (Received September 25, 2017)